

## **REMARKS**

Entry of this response and favorable reconsideration and allowance of this application are requested.

### **1. Summary**

Claims 17-24 and 29-33 remain pending in this application, of which claims 25-28 have been withdrawn from consideration as being directed toward patentably distinct species. As will become evident from the following discussion, all pending claims under examination are patentable over the applied publications of record.

### **3. Response to 35 USC §103 Rejection**

The Examiner has persisted in his rejection of claims 17-24 and 29-33 under 35 USC §103(a) as allegedly "obvious" and hence unpatentable over Sacchetti et al. (US 5,698,487) in view of Wu et al. (US 6,555,494) and Sangokoya et al. (US 5,565,395). In this regard, the Examiner asserts that Sacchetti et al discloses all features of pending independent claim 17 except for the chromium complex of formula (III) but that the chromium complex of formula (III) is known from Wu et al and Sangokoya et al. Thus, the Examiner has concluded that the chromium complex as disclosed in Wu et al and Sangokoya et al could "obviously" be employed in the Sacchetti et al supported catalyst system. Applicants emphatically disagree with this conclusion.

As noted briefly above, the Examiner alleges that it would have been obvious for the skilled person to apply the chromium complex of Wu et al and Sangokoya et al to the supported catalyst system of Sacchetti et al so as to provide an aluminoxane free chromium catalyst composition with good morphology, which combination thereby would result in the catalyst system of the applicants' pending independent claim 17.

Applicants note however that Sacchetti et al discloses catalyst components comprising a metallocene compound and a magnesium halide. The metallocene

compound is a compound of a transition metal M selected from among Ti, V, Zr and Hf containing at least one M- $\pi$  bond. The magnesium halide is a support.

Wu et al discloses a catalyst composition formed from the reaction between a metallocene and a hydroxyaluminoxane. As the metallocene, (tert-butylamido)dimethyl(tetramethyl- $\eta^5$ -cyclopentadienyl)silane chromium dimethyl is mentioned. The catalyst composition may be supported on a carrier. Materials mentioned as the carrier include inorganic oxides, with particulate calcined silica being mentioned as the preferred choice.

Sangokoya et al discloses a catalyst comprising (a) the reaction product of an aluminoxane and a salt selected from the group consisting of alkali metal, alkaline earth metal ammonium, phosphonium and salts of Group 13 to 16 element-containing polyoxy compounds, and (b) a metallocene. As the metallocene, (tert-butylamido)dimethyl(tetramethyl- $\eta^5$ -cyclopentadienyl)silane chromium dichloride is mentioned. It is mentioned in Sangokoya et al that these catalyst components can be supported on inert solid carriers such as metal oxides, for example silica or alumina.

It should especially be noted that Sacchetti et al teaches that a metallocene compound of a transition metal M selected among Ti, V, Zr and Hf containing at least one M- $\pi$  bond may be supported by a specific magnesium halide. Sacchetti et al is completely silent on the possibility of using metallocene compounds having a metal other than Ti, V, Zr and Hf to be supported by the disclosed magnesium halide.

In general, it is very well-known to the skilled person that a metallocene compound behaves completely differently depending on the transition metal contained therein. In other words, there is no predictability nor expectation that a metallocene compound containing one transition metal would behave similar to a metallocene compound containing a different transition metal. The fact that a metallocene compound with **Ti, V, Zr or Hf** supported by a specific magnesium halide shows a

catalytic activity is therefore in no way a predictive indication that a combination of a metallocene with **Cr** and the specific magnesium halide would show a good catalytic activity. Thus the skilled person is not taught from Sacchetti et al to replace the metallocene compound as disclosed therein with the specific metallocene compound defined in applicants' pending independent claim 17. Rather, the fact that the metals disclosed in Sacchetti et al are specifically limited to the four metals Ti, V, Zr and Hf is a strong indication that it is not obvious that the support would also work for a Cr-based metallocene.

Turning to the secondary references, applicants further note that Wu et al discloses a large number of metallocenes. Wu et al discloses supports only in very general terms and no mention is made at all on the effect of the choice of specific supports. Wu et al merely mentions that silica is preferred as the support. Wu et al is also completely silent on which of the disclosed metallocenes would work with supports which are not described therein. Based on Wu et al therefore, the skilled person would not possess a reasonable expectation of success for choosing the metallocene of applicants' pending independent claim 17 from the metallocenes mentioned in Wu et al to be supported by the specific support defined in claim 17.

The above comments regarding Wu et al are equally applicable for Sangokoya et al. Specifically, Sangokoya et al, like Wu et al, teaches that conventional supports may be used for various metallocenes. There is no reasonable expectation of success for the specific combination of the Cr-based metallocene and the Mg-based support of applicants' pending independent claim 17 based on Sangokoya et al.

Wu et al and Sangokoya et al merely show that the Cr-based metallocene of applicants' pending independent claim 17 is *per se* known. Applicants do not dispute this as the applicants are not claiming to be the first inventors of such Cr-based metallocenes. There is however a rather large gap between the teaching that such Cr-based metallocenes are known *per se* and that such specific Cr-based metallocene may

be supported by the specific support of applicants' pending independent claim 17 and still show a catalytic activity high enough that the use of alumoxanes or boron compounds can be eliminated.

Thus, since there is no reasonable expectation of success and since the art evidences that there is neither predictability nor equivalency of the catalytic activity achieved between somewhat similar metallocenes and their supports, an ordinarily skilled person would not have considered it "obvious" to provide the Cr-based metallocenes of Wu et al and Sangokoya et al in the supported catalyst system of Sacchetti et al.

In view of the above comments, applicants submit that withdrawal of the rejection advanced under 35 USC §103(a) is in order. Such favorable action is solicited.

#### **4. Fee Authorization**

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

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